Quiz Master - V1

Modern Application Development I

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Description

Quiz Master - V1 is a structured quiz management system designed for **admin-led quiz creation** and **user participation** with **authentication, role-based access control, and performance tracking** through data visualizations.

Technologies Used

Flask (Python), Jinja2, SQLite, HTML, CSS, Bootstrap, Flask-Login (session management)

Purpose of these technologies:

- Flask provides a lightweight framework for building web applications.
- Jinja2 allows for dynamic rendering of HTML templates.
- SQLite is used for efficient, lightweight data storage.
- Bootstrap ensures a clean and responsive UI.

DB Schema Design

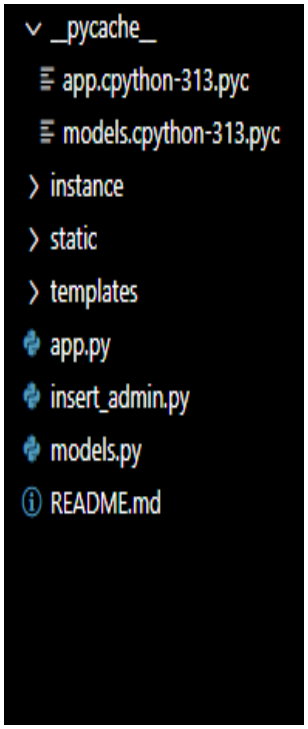
Table Name	Column Name	Data Type	Constraints
users	id	INTEGER	PK, AUTOINCREMENT
	username	TEXT	UNIQUE, NOT NULL
	email	TEXT	UNIQUE, NOT NULL
	password	TEXT	NOT NULL
	full_name	TEXT	NOT NULL
	qualification	TEXT	
	dob	TEXT	
admins	id	INTEGER	PK, AUTOINCREMENT
	email	TEXT	UNIQUE
	password	TEXT	
subjects	id	INTEGER	PK, AUTOINCREMENT
	name	TEXT	UNIQUE, NOT NULL
	description	TEXT	
chapters	id	INTEGER	PK, AUTOINCREMENT
	subject_id	INTEGER	FK -> subjects(id)
	name	TEXT	NOT NULL
	description	TEXT	
quizzes	id	INTEGER	PK, AUTOINCREMENT
	chapter_id	INTEGER	FK -> chapters(id)
	name	TEXT	NOT NULL
	num_questions	INTEGER	NOT NULL
	date_of_quiz	TEXT	

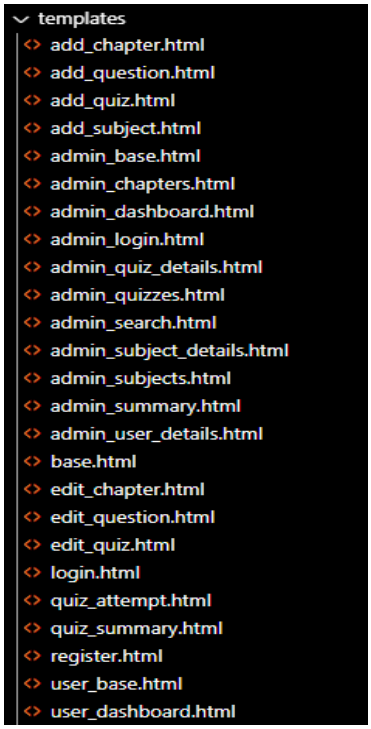
Table Name	Column Name	Data Type	Constraints
	time_duration	TEXT	
	remarks	TEXT	
questions	id	INTEGER	PK, AUTOINCREMENT
	quiz_id	INTEGER	FK -> quizzes(id) CASCADE
	chapter_id	INTEGER	FK -> chapters(id) CASCADE
	title	TEXT	NOT NULL
	statement	TEXT	NOT NULL
	option1	TEXT	NOT NULL
	option2	TEXT	NOT NULL
	option3	TEXT	NOT NULL
	option4	TEXT	NOT NULL
	correct_option	INTEGER	CHECK(1-4), NOT NULL
scores	id	INTEGER	PK, AUTOINCREMENT
	quiz_id	INTEGER	FK -> quizzes(id)
	user_id	INTEGER	FK -> users(id)
	time_stamp_of_attempt	TEXT	
	total_scored	INTEGER	
user_answers	id	INTEGER	PK, AUTOINCREMENT
	quiz_id	INTEGER	FK -> quizzes(id) CASCADE
	user_id	INTEGER	FK -> users(id) CASCADE
	timestamp	TEXT	DEFAULT CURRENT_TIMESTAMP
	attempt_id	INTEGER	
	question_id	INTEGER	FK -> questions(id) CASCADE
	selected_option	INTEGER	NOT NULL
	is_correct	BOOLEAN	NOT NULL

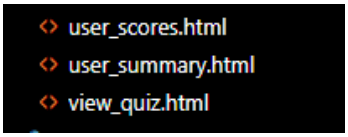
Reasons for this design:

- Ensures **data integrity** by using **foreign keys** for linking subjects, chapters, and quizzes.
- Follows **normalization** to prevent redundant data storage.
- Allows **scalability**, ensuring easy expansion for additional features.

Architecture and Features







Project Organization:

- **Controllers (Flask Routes):** Located in `app.py`, handling user authentication, quiz management, and scoring logic.
- **Templates (Frontend):** Stored in the `templates/` directory, using Jinja2 for rendering dynamic content.
- **Database Models:** Managed in `models.py`, defining the schema and relationships.

Implemented Features:

- **User Authentication:** Registration, login, and role-based access control.
- **Quiz Management:** Admin can create subjects, chapters, quizzes, and add questions.
- **User Quiz Attempts:** Users can attempt quizzes with real-time score tracking.
- **Scoring System:** Calculates and stores scores based on correct and incorrect answers.
- **Admin Summary Dashboard:** Displays registered user, active quiz, chapters etc..
- **Search Functionality:** Admin can search users, subjects, and quizzes for efficient management.

Video

https://drive.google.com/file/d/10axKrhiUlCNYaGiX_T3Z_bqQfToW6xrK/view?usp=sharing

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